

IntesisBox[®]

ME-AC-LON-1 v.1.3.4

LonWorks Interface for Mitsubishi Electric air conditioners.
Compatible with all models of Domestic & Mr.Slim lines.

User Manual

Order Code: **ME-AC-LON-1**

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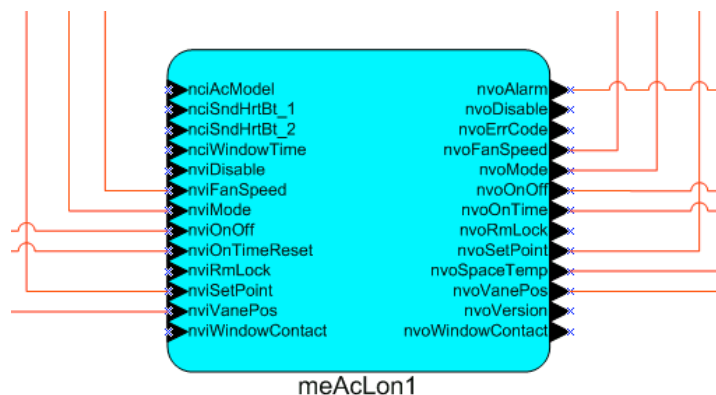
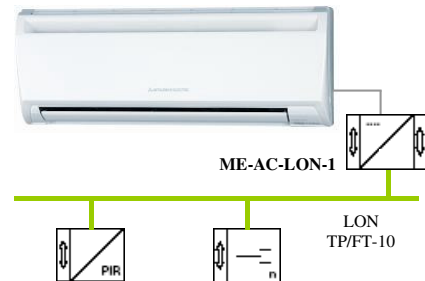
1. Presentation



The ME-AC-LON-1 interface allows a complete and natural integration of **Mitsubishi Electric** air conditioners into LonWorks networks.

Compatible with all models of Domestic and Mr.Slim line.

- Reduced dimensions. 93 x 53 x 58 mm.
- Quick and easy installation.
Mountable on DIN rail, wall, or even inside the indoor unit in some models of AC.
- External power not required.
- Direct connection to LONWORKS TP/FT-10 bus.
- Direct connection to the AC indoor unit.
The cable for this connection is also supplied.
- Configuration from any LONWORKS commissioning tool.
- Total Control and Supervision.
- Real states of the AC unit's internal variables.
- Allows to use simultaneously the IR remote control and LONWORKS.



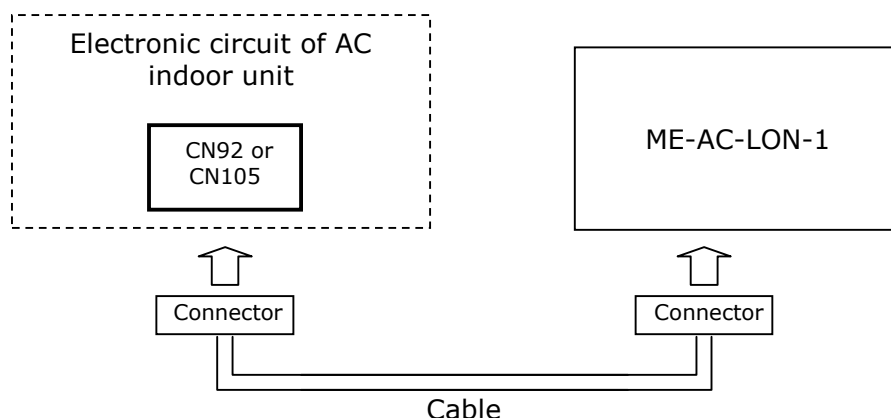
2. Connection

The interface comes with cable + connectors for direct connection to the AC indoor unit, and with a plug-in terminal block of 2 poles for connection to a LonWorks TP/FT-10 bus.

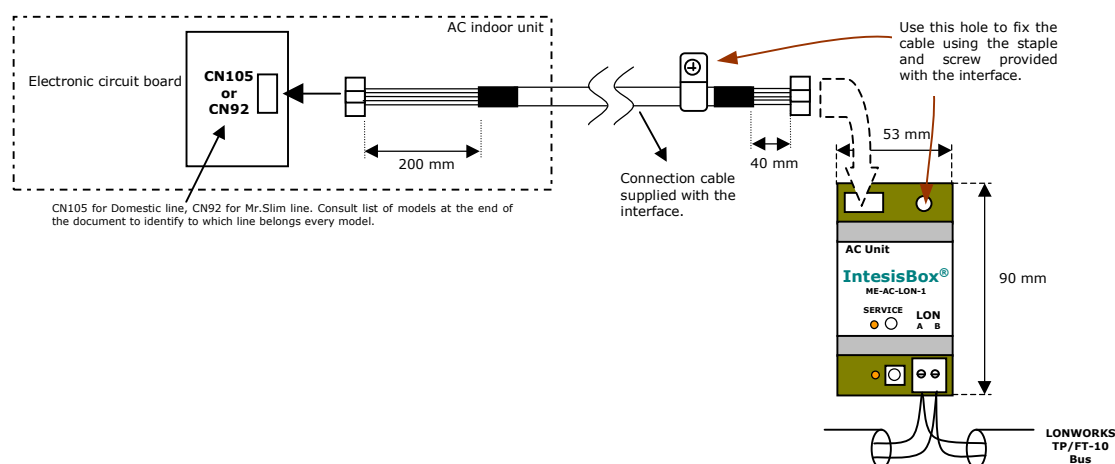
Disconnect mains power from the AC unit. Open the front cover of the indoor unit in order to have access to the electronic circuit. In the electronic circuit locate the socket connector marked as:

CN92 in Mr.Slim models, or **CN105** in the rest of models.

Using the cable that comes with the interface, insert one of its connectors, the one installed in the shortest uncovered part, into the socket of the ME-AC-LON-1, and the other connector, the one installed in the largest uncovered part, to the socket **CN92** or **CN105** of the AC unit's electronic circuit. You can place the ME-AC-LON-1 inside or outside the AC indoor unit depending on your needs, remember that ME-AC-LON-1 must be also connected to the LonWorks TP/FT-10 network. Close the AC indoor unit's front cover again.

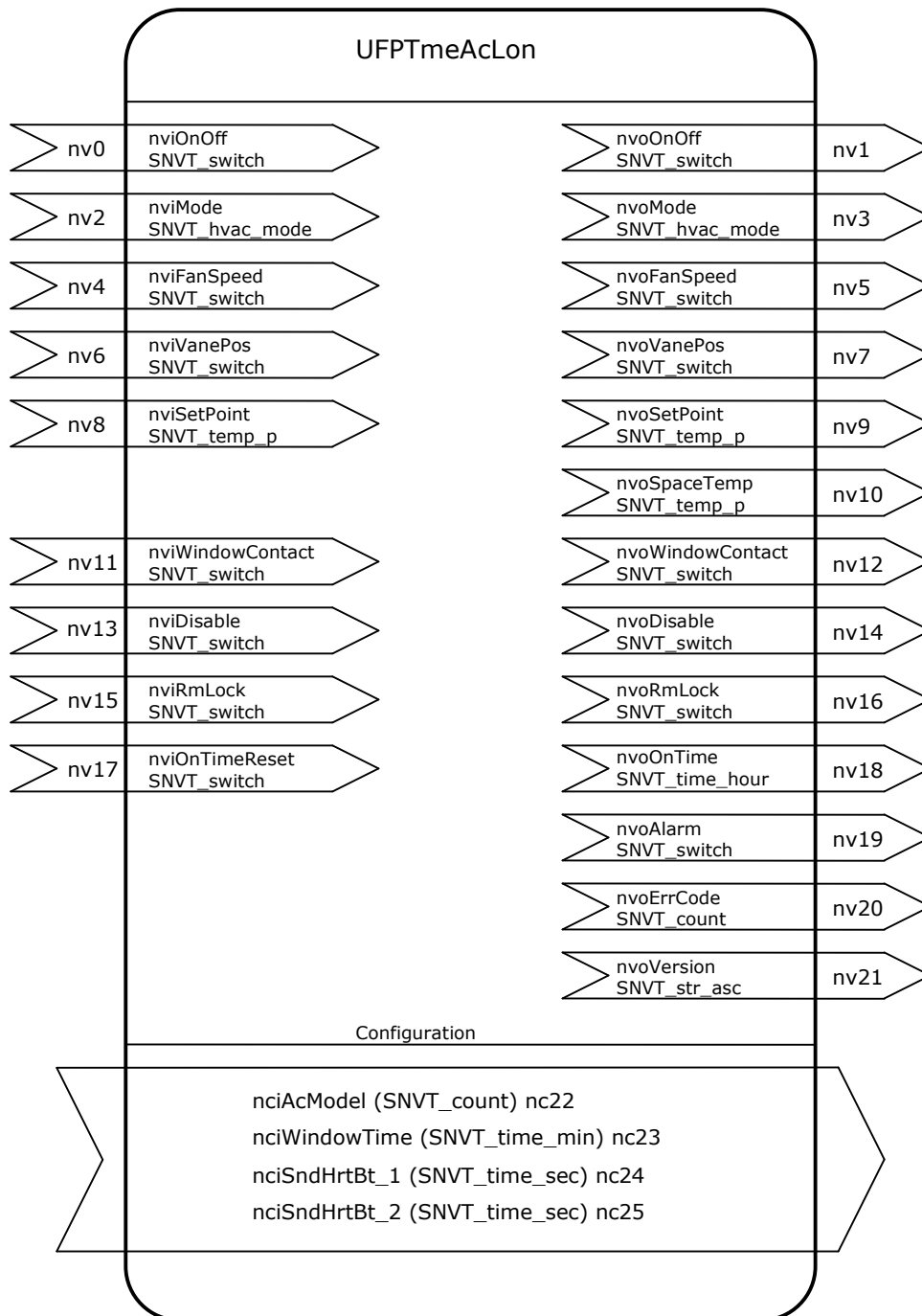


Do not modify the length of the cable supplied with the interface, it may affect to the correct operation of the interface.



3. LonWorks Interface Specification

3.1 Functional Profile



3.2 Network Variables Interface

nv0 nviOnOff

network input SNVT_switch nviOnOff;

This input network variable is used to switch On and Off the indoor unit

Valid Range

Unit Command	NV content
ON	value > 0% AND state ≥ 1
OFF	value = 0% OR state = 0

nv1 nvoOnOff

network output SNVT_switch nvoOnOff;

This output network variable indicates present On/Off status of the indoor unit

Valid Range

Unit Status	NV content
ON	value = 100%; state = 1
OFF	value = 0%; state = 0

Default Value

Present value in unit once indoor unit is powered, and ME-AC-LON-1 is in configured online mode

Default Service Type

Acknowledged

Update Rate

The value is defined by *nciSndHrtBt_1*

nv2 nviMode

network input SNVT_hvac_mode nviMode;

This input network variable is used to change the operation mode of the indoor unit

Valid Range

(See section 6 for detail on indoor unit model differences and function availability)

Unit Command	NV content
AUTO	HVAC_AUTO (0)
HEAT	HVAC_HEAT (1)
DRY	HVAC_PRE_COOL (5)
COOL	HVAC_COOL (3)
FAN	HVAC_FAN_ONLY (9)
FAN	Any other (n)

nv3 nvoMode

network output SNVT_hvac_mode nviMode;

This output network variable indicates present operation mode of the indoor unit

Valid Range

(See section 6 for detail on indoor unit model differences and function availability)

Unit Status	NV content
AUTO	HVAC_AUTO (0)
HEAT	HVAC_HEAT (1)
DRY	HVAC_PRE_COOL (5)
COOL	HVAC_COOL (3)
FAN	HVAC_FAN_ONLY (9)

Default Value

Present value in unit once indoor unit is powered, and ME-AC-LON-1 is in configured online mode

Default Service Type

Acknowledged

Update Rate

The value is defined by *nciSndHrtBt_1*

nv4 nviFanSpeed

network input SNVT_switch nviFanSpeed;

This input network variable is used to change fan speed of the indoor unit

Valid Range

(See section 6 for detail on indoor unit model differences and function availability)

Unit Command	NV content
AUTO	state = 0
LOW	state ≥ 1 AND 0% ≤ value ≤ 25%
MID-1	state ≥ 1 AND 25% < value ≤ 50%
MID-2	state ≥ 1 AND 50% < value ≤ 75%
HIGH	state ≥ 1 AND 75% < value ≤ 100%

nv5 nvoFanSpeed

network output SNVT_switch nviFanSpeed;

This output network variable indicates present fan speed of the indoor unit

Valid Range

(See section 6 for detail on indoor unit model differences and function availability)

Unit Status	NV content
AUTO	state = 0; value = 0%
LOW	state = 1; value = 25%
MID-1	state = 1; value = 50%
MID-2	state = 1; value = 75%
HIGH	state = 1; value = 100%

Default Value

Present value in unit once indoor unit is powered, and ME-AC-LON-1 is in configured online mode

Default Service Type

Acknowledged

Update Rate

The value is defined by *nciSndHrtBt_1*

nv6 nviVanePos

network input SNVT_count nviVanePos;

This input network variable changes vane position of the indoor unit

Valid Range

(See section 6 for detail on indoor unit model differences and function availability)

Unit Command	NV content
AUTO	state = 0
HORIZ	state ≥ 1 AND $0\% \leq \text{value} \leq 10\%$
POS2	state ≥ 1 AND $10\% < \text{value} \leq 30\%$
POS3	state ≥ 1 AND $30\% < \text{value} \leq 50\%$
POS4	state ≥ 1 AND $50\% < \text{value} \leq 70\%$
VERT	state ≥ 1 AND $70\% < \text{value} \leq 90\%$
SWING	state ≥ 1 AND $90\% < \text{value}$

nv7 nvoVanePos

network output SNVT_count nvoVanePos;

This output network variable indicates present vane position of the indoor unit

Valid Range

(See section 6 for detail on indoor unit model differences and function availability)

Unit Status	NV content
AUTO	state = 0
HORIZ	state = 1; value = 10%
POS2	state = 1; value = 30%
POS3	state = 1; value = 50%
POS4	state = 1; value = 70%
VERT	state = 1; value = 90%
SWING	state = 1; value = 100%

Default Value

Present value in unit once indoor unit is powered, and ME-AC-LON-1 is in configured online mode

Default Service Type

Acknowledged

Update Rate

The value is defined by nciSndHrtBt_1

nv8 nviSetPoint

network input SNVT_temp_p nviSetPoint;

This input network variable controls temperature setpoint of the indoor unit

Valid Range

(See section 6 for detail on indoor unit model differences and function availability)

16...31°C

nv9 nvoSetPoint

network output SNVT_temp_p nvoSetPoint;

This output network variable indicates present temperature setpoint of the indoor unit

Valid Range

(See section 6 for detail on indoor unit model differences and function availability)

16...31°C

Default Value

Present value in unit once indoor unit is powered, and ME-AC-LON-1 is in configured online mode

Default Service Type

Acknowledged

Update Rate

The value is defined by *nciSndHrtBt_1*

nv10 nvoSpaceTemp

network output SNVT_temp_p nvoSpaceTemp;

This output network variable indicates present ambient temperature measured by the indoor unit

Valid Range

(See section 6 for detail on indoor unit model differences and function availability)

10...38°C

Default Value

Present value in unit once indoor unit is powered, and ME-AC-LON-1 is in configured online mode

Default Service Type

Acknowledged

Update Rate

The value is defined by *nciSndHrtBt_2*

nv11 nviWindowContact

network input SNVT_switch nviWindowContact;

This input network variable is used to change the window contact status of the indoor unit

Once contact is ON –window is open– indoor unit will be switched OFF after a timeout, configured at *nciWindowTime* (nc23)

Valid Range

Unit Command	NV content
Window OPEN	value > 0% AND state ≥ 1
Window CLOSED	value = 0% OR state = 0

nv12 nvoWindowContact

network output SNVT_switch nvoWindowContact;

This output network variable indicates the window contact status of the indoor unit

Valid Range

Unit Status	NV content
Window OPEN	value = 100%; state = 1
Window CLOSED	value = 0%; state = 0

Default Value

state = 0; value = 0%

Update Rate

This network variable is updated always that its value changes

nv13 nviDisable

network input eeprom SNVT_switch nviDisable;

This input network variable is used to disable/enable ME-AC-LON-1 device.

Value is stored in ME-AC-LON-1's eeprom

Once disabled, the only input NV active will be this one, the rest of input NVs will be disabled. To enable again the device, just write in this NV the appropriate value/state.

Valid Range

Unit Command	NV content
ME-AC-LON-1 DISABLED	value > 0% AND state ≥ 1
ME-AC-LON-1 ENABLED	value = 0% OR state = 0

nv14 nvoDisable

network output SNVT_switch nvoDisable;

This output network variable indicates whether ME-AC-LON-1 is disabled

Valid Range

Unit Status	NV content
ME-AC-LON-1 DISABLED	value = 100%; state ≥ 1
ME-AC-LON-1 ENABLED	value = 0%; state = 0

Default Value

state = 0; value = 0%

Default Service Type

Acknowledged

Update Rate

This network variable is updated always that its value changes

nv15 nviRmLock

network input eeprom SNVT_switch nviRmLock;

This input network variable is used to disable indoor unit's remote control
Value is stored in ME-AC-LON-1's eeprom

Valid Range

Unit Command	NV content
Remote Control DISABLED	value > 0% AND state ≥ 1
Remote Control ENABLED	value = 0% OR state = 0

nv16 nvoRmLock

network output SNVT_switch nvoRmLock;

This output network variable shows current status of remote control disablement

Valid Range

Unit Status	NV content
Remote Control DISABLED	value = 100%; state = 1
Remote Control ENABLED	value = 0%; state = 0

Default Value

state = 0; value = 0%

Default Service Type

Acknowledged

Update Rate

This network variable is updated always that its value changes

nv17 nviOnTimeReset

network input SNVT_switch nviOnTimeReset;

This input network variable is used to reset the operation time counter shown in *nvoOnTime*.

Valid Range

Unit Command	NV content
RESET <i>nvoOnTime</i>	value > 0% AND state ≥ 1

nv18 nvoOnTime

network output eeprom SNVT_time_hour nvoOnTime;

This output network variable indicates the operation time for the indoor unit

Value is stored in ME-AC-LON-1's eeprom

This value can be used for the maintenance of indoor unit's filter, as well as for monitoring the operation time of the unit

Valid Range

0~65535 hour

Default Value

N/A

Default Service Type

Acknowledged

Update Rate

This network variable is updated always that its value changes

nv19 nvoAlarm

network output SNVT_switch nvoAlarm;

This output network variable indicates failure in the communication between ME-AC-LON-1 device and the AC indoor unit

Valid Range

Unit Status	NV content
ON	value = 100%; state = 1
OFF	value = 0%; state = 0

Default Value

state = 0; value = 0%

Default Service Type

Acknowledged

Update Rate

This network variable is updated always that its value changes

nv20 nvoErrCode

network output SNVT_count nvoErrCode;

This output network variable indicates the present error code indicated by the indoor unit

Valid Range

Unit Status	NV content
No error	8000
Error	Error code: <ul style="list-style-type: none">• 0001 ~ 7999: indoor unit error code• 8001: ME-AC-LON-1 Communication Error (<i>nvoAlarm = (100%,1)</i>)

Default Value

8000 (No error)

Default Service Type

Acknowledged

Update Rate

This network variable is updated always that its value changes

nv21 nvoVersion

network output polled SNVT_str_asc nvoVersion;

This polled output network variable indicates the firmware version of ME-AC-LON-1 device

Valid Range

Up to 30 ascii characters string

Default format is "V.x.yy.zz", where x.yy.zz stands for the firmware version on the device

Default Value

N/A

Default Service Type

N/A (non-bindable)

Update Rate

This network variable is polled (i.e. it will be never updated on change)

3.3 Configuration Properties

nc22 nciAcModel

network input eeprom SNVT_count nciAcModel;

This configuration property is used to indicate the model of the indoor unit to which ME-AC-LON-1 device is attached

Valid Range

AC Model	NV content
MSZ-FA..	1
MSZ-GA22.., MSZ-GA25.., MSZ-GA35..	2
MSZ-GA50.., MSZ-GA60.., MSZ-GA71..	3 (default)
MSZ-GB..	4
MSZ-GC..	5
MFZ-KA...	6
SEZ...	7
PLA...	8
PCA...	9
PEAD...	10
PSA...	11
PKA...	12
SLZ...	13

Factory Settings

3 (MSZ-GA50.., MSZ-GA60.., MSZ-GA71..)

nc23 nciWindowTime

network input eeprom SNVT_count nciWindowTime;

This configuration property is used to indicate the timeout that will take for ME-AC-LON-1 to switch OFF indoor unit after window has been open

Valid Range

0~30 minutes

Factory Settings

0 minutes (will switch OFF indoor unit immediately after opening window)

nc24 nciSndHrtBt_1

network input eeprom SNVT_time_sec nciSndHrtBt_1;

This configuration property defines the maximum time between the previous and next update for following network variables:

- *nvoOnOff*
- *nvoMode*
- *nvoFanSpeed*
- *nvoVanePos*
- *nvoSetPoint*

Valid Range

0~65535 seconds

Factory Settings

100,0 seconds

nc25 nciSndHrtBt_2

network input eeprom SNVT_time_sec nciSndHrtBt_2;

This configuration property defines the maximum time between the previous and next update for network variable *nvoSpaceTemp*

Valid Range

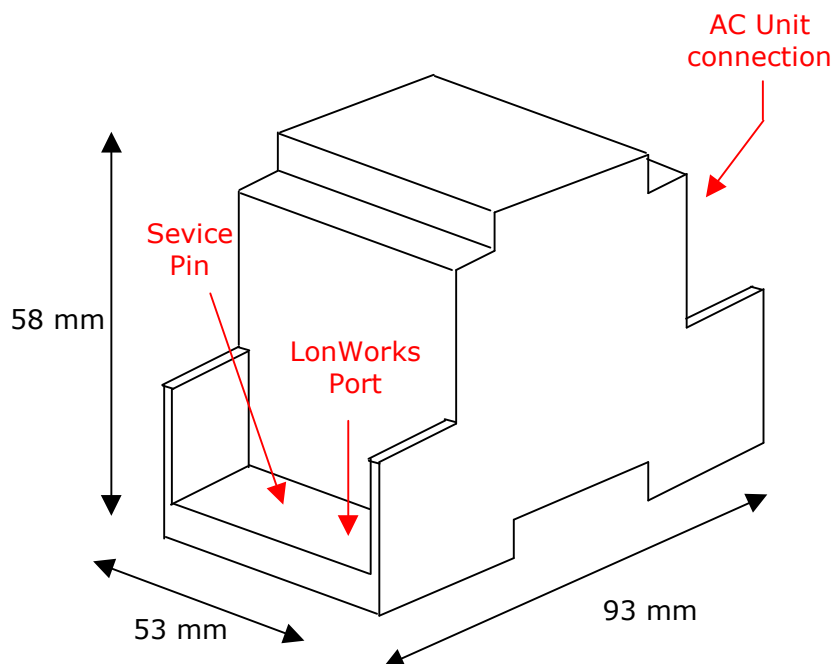
0~65535 seconds

Factory Settings

100,0 seconds

4. Specifications

Dimensions:	93 x 53 x 58 mm
Weight:	85 g
Operating Temperature:	-25 . . . 85°C
Stock Temperature:	-40 . . . 85°C
Operating Humidity:	25-90% RH @50°C, non-condensing
Stock Humidity:	95% RH @50°C, non-condensing
Isolation voltage:	1000Vrms during 60 seconds, 277Vrms continuous
Lonworks Media:	Compatible with TP/FT-10 channels (FTT-10 and FTT-10A) Compatible with LPT-10 Link Power Transceivers
Lonworks Network polarity:	Polarity insensitive



5. AC Unit Types.

The column *Type* shows the value to enter in *nc22 nciAcModel* of the interface. In case you introduce a type not specified in the list, it will be considered as type 3.

Type	Prefix (first part) of the AC unit model number.	Line
1	MSZ-FA...	Domestic
2	MSZ-GA22.., MSZ-GA25.., MSZ-GA35...	Domestic
3	MSZ-GA50.., MSZ-GA60.., MSZ-GA71...	Domestic
4	MSZ-GB...	Domestic
5	MSZ-GC...	Domestic
6	MFZ-KA...	Domestic
7	SEZ...	Mr.Slim
8	PLA...	Mr.Slim
9	PCA...	Mr.Slim
10	PEAD...	Mr.Slim
11	PSA...	Mr.Slim
12	PKA...	Mr.Slim
13	SLZ...	Mr.Slim

Any AC unit with a model number not specified in this list, is not compatible with the interface and can not be used.

6. Options available for some communications objects depending on AC Type.

Type:1	MSZ-FA...			Temperature Set Point			
Mode	Fan	Vane	Warm	Cool	Dry	Auto	
HEAT, DRY, COOL, AUTO	AUTO, LOW, MID1,MID2	0,1,2,3,4,5,6	31..16	31..16		31..16	

Type:2	MSZ-GA22..., MSZ-GA25..., MSZ-GA35..			Temperature Set Point			
Mode	Fan	Vane	Warm	Cool	Dry	Auto	
HEAT, DRY, COOL, AUTO	AUTO, LOW, MID1,MID2	0,1,2,3,4,5,6	31..16	31..16		31..16	

Type:3	MSZ-GA50..., MSZ-GA60..., MSZ-GA71..			Temperature Set Point			
Mode	Fan	Vane	Warm	Cool	Dry	Auto	
HEAT, DRY, COOL, AUTO	AUTO, LOW, MID1,MID2	0,1,2,3,4,5,6	31..16	31..16		31..16	

Type:4	MSZ-GB...			Temperature Set Point			
Mode	Fan	Vane	Warm	Cool	Dry	Auto	
HEAT, DRY, COOL, AUTO	AUTO, LOW, MID1,MID2	0,1,2,3,4,6	31..16	31..16		31..16	

Type:5	MSZ-GC...			Temperature Set Point			
Mode	Fan	Vane	Warm	Cool	Dry	Auto	
HEAT, DRY, COOL, AUTO	AUTO, LOW, MID1,MID2	0,1,2,3,4,6	31..16	31..16		31..16	

Type:6	MFZ-KA...			Temperature Set Point			
Mode	Fan	Vane	Warm	Cool	Dry	Auto	
HEAT, DRY, COOL, AUTO	AUTO, LOW, MID1,MID2, HIGH	0,1,2,3,4,5,6	31..16	31..16		31..16	

Type:7	SEZ...			Temperature Set Point			
Mode	Fan	Vane	Warm	Cool	Dry	Auto	
HEAT, DRY, COOL, VENT, AUTO	LOW, MID2		28..17	30..19	30..19	28..19	

Type:8	PLA...			Temperature Set Point			
Mode	Fan	Vane	Warm	Cool	Dry	Auto	
HEAT, DRY, COOL, VENT, AUTO	LOW, MID1, MID2	1,3,4,5,6	28..17	30..19	30..19	28..19	

Type:9	PCA...			Temperature Set Point			
Mode	Fan	Vane	Warm	Cool	Dry	Auto	
HEAT, DRY, COOL, VENT, AUTO	LOW, MID1, MID2	1,3,4,5,6	28..17	30..19	30..19	28..19	

Type:10	PEAD...			Temperature Set Point			
Mode	Fan	Vane	Warm	Cool	Dry	Auto	
HEAT, DRY, COOL, VENT, AUTO	LOW, MID2		28..17	30..19	30..19	28..19	

Type:11	PSA...			Temperature Set Point			
Mode	Fan	Vane	Warm	Cool	Dry	Auto	
HEAT, DRY, COOL, VENT, AUTO	LOW, MID2		28..17	30..19	30..19	28..19	

Type:12	PKA...			Temperature Set Point			
Mode	Fan	Vane	Warm	Cool	Dry	Auto	
HEAT, DRY, COOL, VENT, AUTO	LOW, MID2	1,3,4,5,6	28..17	30..19	30..19	28..19	

Type:13	SLZ...			Temperature Set Point			
Mode	Fan	Vane	Warm	Cool	Dry	Auto	
HEAT, DRY, COOL, VENT, AUTO	LOW, MID1, MID2	1,3,4,5,6	28..17	30..19	30..19	28..19	

7. Error Codes

Code (In Hexadecimal)	Description
8000	No active error
0001	Communication error with the AC unit
1102	Discharge Temperature high
1108	Internal thermostat detector working (49C)
1110	Outdoor unit fail
1300	Pressure low
1302	Pressure high (High pressure probe working 63H)
1503	Protection against freeze or battery high temperature
1504	Protection against freeze or battery high temperature
1504	Over heating protection
1509	High pressure error (ball valve closed)
1520	Super heating anomaly due to low temp. of discharge. (TH4)
2500	Erroneous operation of drain pump
2502	Erroneous operation of drain pump
2503	Drain sensor anomaly (DS)
4030	Serial transmission error
4100	Compressor pause due to excess of current (initial block)
4101	Compressor pause due to excess of current (overload)
4102	Phase detection opened
4103	Anti-phase detection
4108	Phase opened in phase L2 or connector 51CM opened
4118	Error in the anti-phase detector (electronic board)
4124	Connector 49L opened
4210	Cut due to over-current of compressor
4220	Voltage anomaly
4230	Radiator panel temperature anomaly (TH8)
5101	Ambient temperature probe anomaly (TH1), indoor unit
5102	Liquid probe anomaly (TH2)
5102	Cond/Evap probe anomaly (TH5)
5104	Error detection in discharge temperature
5105	Outdoor probe error TH3
5106	Outdoor probe error TH7
5107	Outdoor probe error TH6
5110	Outdoor probe error TH8
5202	Connector 63L opened
5300	Current probe error
6600	MNET duplicated address definition
6602	MNET Line transmission hardware error
6603	MNET BUS busy
6606	MNET Line transmission error
6607	MNET transmission error
6607	MNET without ack
6608	MNET transmission error
6608	MNET without response
6831	IR remote control transmission error (reception error)
6832	IR remote control transmission error (transmission error)
6840	Transmission error with the indoor/outdoor unit (reception error)
6841	Transmission error with the indoor/outdoor unit (transmission error)
6844	Error in inter-connection cable in the indoor/outdoor unit, indoor unit number deactivated (5 min or more)
6845	Error in inter-connection cable in the indoor/outdoor unit (cabling error, disconnection)
6846	Initial timer deactivated
8001	ME-AC-LON-1 device communication error

In case you detect an error code not listed, contact your nearest Mitsubishi Electric technical support service.